Effects of war on fuel market equilibrium

Fuel, oil or in some countries called gas is undeniable as important commodities and resources for many sectors in the world especially in transportation, providing energy and industries. Let take a look on fuel sales. The sale of world oil is USD 1, 600 billion in the year 2008. Most countries without this natural resource will have to pay in order to get this resource and in the year 2000, Saudi Arabia is reported gained about USD 80 billion dollars as export income. This shows that the demand of this resource is becoming high and of course important as energy sources.

Based on International Energy Agency (IEA) report on 2009, top three importers of oil are United States of America, Japan and China. Globally, fuel market demands are increasing every year. According to IEA on December 2010 report, global oil product is revised up from 130, 000 (Kb/d) barrels per day to 87. 4 million barrels per day and it is expected 260 000 barrels per day to 88 million barrels per day in 2011. That was a huge increasing demand!

What does demand means? Demand is determined as total amount of goods required and able to be purchased by consumers at various price levels in certain period. Besides that, demand also related with other variable which is quantity and price. In measuring demand quantity for oil and car market, we can predict that other variables also affecting consumption are remains.

Nowadays, oil productions are dominated by Organization of Petroleum Exporting Countries (OPEC) which led by Arab Saudi and the others are five of Middle East producers which produce 75% of global output. The world oil production chart is shows in figure 1 (b) as per below:

As we know, crude oil plays important role in every sectors of world economic from heavy industries to agriculture sector. Once war outbreak in a country especially one of the main producers of oil in the world, then the impact will be spread out all over the world. Why? Oil prices will causes increasing in prices and directly infecting world economics too. As an example, Iraq invasion in Kuwait in 1990 has reduced the supply of oil as Kuwait contributed 2. 5% of world oil production while Iraq contributed 5%. Therefore, this has cut off oil supplies for about 7. 5%. Thus, we could calculate the percentage of oil production being cut off from country A!

However, this will reduce the aggregate of oil supply and upward pressure on the price level and indirectly causing decline of total output. See? The impacts are interrelated with each other and thus affect the world economy. According to the law of demand, it says that when prices increases, demand quantity decreases and when price decreases, demand quantity increases. This is shown in figure 2:

In the other hand, we can predict the effect on equilibrium quantity and prices when there are changes in demand or supply. Equilibrium is the term used in economics field which means a condition where all variables have reached established position with no tendency to change.

Market equilibrium will maintain as no market forces which affecting demand and supply. Demand and supply are shifting to the left or to the right as a response to changes in determinant variables. In country A case, fuel supply disruptions happen and thus causing price increase and demanding falling decrease. This is due to economics law states that all factors all equal as the

price of goods or services increase and the demand will decrease. This is shown in figure 3(a) as per below:

As the fuel price increase from P1 to P2, quantity demanded for fuel will decrease. This relation are referred to Law of Demand where when price increases demand quantities will decreases and when price decreases, the demand quantity will increases. Therefore, consumers will reduce their demand for cars and this will result shifting supply curve to left.

According to supply change, when supply decreases and the demand remain unchanged, the equilibrium price will increase and at the same time equilibrium quantity will decrease. Let's look what happen while Hurricane Katrina blows US in September 2005. The price was raised by sellers and in certain states such as Arkansas and Kentucky there are shortage of supplies. Shortage of supplies also called excess demand. Therefore, when the war broke out in country A, then we can predict that the same scenario will happen and the situation might be worst. This will results in rise in the equilibrium price of fuel. The demand of oil is inelastic as we couldn't replace or substitute oil as energy sources. Inelastic of demand here means that the price change ratio is bigger than ratio of quantity change. Therefore, price change will give more significant effect.

Once the fuel or petrol affected due to war in country A, car market also will influence as they are classified as complementary goods. Complementary good means that goods which can be consumed together to get satisfaction. Therefore, the effects of war on car market are discussed as per below chapter.

Effects of war on car market equilibrium

What is the relationship between oil and car? Actually, we can say that if there is no oil, major problems will be faced by transportation sectors such as lorry, tanks, public vehicles, industries and also our daily transportation. In the year 2009, Malaysia faced shortage of diesel supply and what is the effect? There are lots of vehicles which used diesel stocked because of this. The same phenomena are predicted to be happening when country A involved in war. In wider view, there are about eight millions of vehicles all over the world which used fuel in the year 2000 and this number is greatly increased every year!

So what are the impacts if the fuel price increased? Fuel consumers may choose to drive less, using alternative transportation such as commuter, looking for fuel resource substitution and they might choose electric based engines such as hybrid car. Therefore, there are close relationship between fuel price and car market as fuel and car are complementary on each other. By the way, what will happen if the price of fuel increasing whiles the price of car increase too caused by tax? We could imagine that there is lot of cars with various engine power offered with low prices!

As the fuel price is higher need to be paid by consumers, the cost of petrol guzzling vehicle such as BMW and Mercedes Benz will increased. Thus, the demand of luxury cars will decline. As an alternative, consumers in the market will look for cost saving vehicles as solution. They might change to lower power vehicles in cubic centimeter (cc) such as PERODUA cars in the market and etc. as solution if the war happens for short term.

This has been proved by a research which has been done by economist at Imperial College, London recommended that consumers will tends to look for more efficient energy cars, selecting and prioritize public transport for trips and minimize their travel distances. As a result, there will be lots of luxury used car offered in the market and demand curve will shift to left as shown in figure 5.

In the other hand, what will happen if the war continues for long term? In this case, we can assume that production of new cars will be reduced or being stop at all until the situation recovered and thus, demand curve will decrease. This effect towards demand curve and supply curve is illustrated in figure 6:

Tax imposition effects of the fuel market

Tax is implemented by government who rules in a country towards sellers for each unit of goods being sold. Therefore, we as consumer had to pay higher cost to get those items we required. As an example, we are paying additional 1% which total out 6% of government tax for ASTRO services since February 2011.

Tax which imposed by government means increase cost for sellers. Thus, the tax will shift the supply curve the left as in figure 7. From the figure, the price paid by consumers and price received by sellers are shown as the different at tax value of t. The amount of tax which collected by government is on area P1 P2 BC, while amount borne by consumer are on P0 P2 BE and the seller tax is on area P1 P0 EC. In most countries, the implementation on

tax fuels is intended for transportation sector and it is function as one of revenue source.

As the demand of car is elastic, it means that demand is responding to price change. In this case, the supplier or producer must borne or absorb the tax. When demand is elastic, the effect of tax implemented is raising the price as mentioned in figure 8. However, equilibrium quantity will decrease in this situation.

At war situation, demand for fuel will drop and demand for substitutes will increase. Among substitution choices at this time is using alternative electric vehicles and focusing on public transportation such as train.

In 2008, Malaysia is ranked at 26th place as world oil producers with 753, 700 billion barrels per day (Malaysia is also one of OPEC member). The number of production is small if compared to Arab Saudi which produces 10, 250, 000 billion barrels per day. Due to war impact even though we still have the resources, the fuel must be used with most efficient way as Malaysia just began to learn, implement and use other energy alternative such as coal in electric plant.

Who will bear the taxes imposed on fuel?

Taxes consist of direct and indirect tax. Then where does tax income goes to? Those incomes which collected by a government were used for development of country, public works, education, enforcement of law, health care and etc. Big issue arising on the tax imposed by government is who will bear the cost? Actually when the demand is inelastic, the producer or seller has the ability to pass most or all of indirect tax to consumer by raising the

market price of car. What is mean by elasticity? Elasticity is defined as sensitivity measurement of a particular variable towards one of its determinant such as price. Therefore when demand of car market price is elastic, the producer cannot simply pass the tax to the consumer but they have to bear majority of the tax by themselves. Therefore, the tax borne by consumer and supplier is shown in figure 9 as below:

Usually, suppliers will hand over the tax which borne by them in whatever goods or services to consumer. The different is whether the amount is small or big. Price elasticity of demand measures response of quantity demanded by consumer of a particular good towards change in the price of the good.

What does indirect tax mean from figure 9 as above? Indirect tax is the tax which imposed by government to suppliers. Examples for these taxes are duties on alcohol, cigarettes and fuel. For certain reasons, government levied tax as a strategy to improve environment. In other words, tax is opposite of subsidies which given by government.

Logically, consumers have to pay the tax for fuel as it is needed daily. Whether we move to a destination to another by our own car, taxi, buses, by flight or by sea, it all used fuel as energy. As country A still recovering from war, it means that world supplies for fuel will take times to gain stable again. In countries like Japan, China and Denmark, transformation has begun to develop electric vehicles. In Japan, their cab has used fully electric operational cab in Tokyo. Malaysia which also affected by high fuel prices should learn and start to develop electric vehicles too and should concentrate on transformation.

As we know, the increasing price of fuel will directly influence the other daily goods such as milk, sugar, meat and etc. to rise too. Thus, consumers have to bear the effects in the other side. Therefore, it is unfair all burdens of taxes being bonded by consumers.

Conclusions

As fuel demands are increasing all over the world, alternative energy substitution of fuel are highly recommended. According to Bob Lutz from General Motors, when the price of oil rising and stay, it has negative effects to economy as oil is used in the production of virtually in everything, including steel, aluminum, plastics, rubber, fabrics, transportation, and food (Daniel Gross, 2008). Consumers may not hold the high prices for longer period of time.

Implementation of tax must be review from time to time and should be studied on the impacts to consumer, market and economy. Too high taxes will burden consumers and of course the price of goods will rise too. Therefore, demand of goods will decrease!

In order to implement the taxes, government in country A must consider many aspects before the tax is being implemented. This step actually will give impact for long term. Why? We have seen the effect of high fuel price towards car market. Nowadays, car is considered as must have or needed at least one unit in a family or a household. However, lots of car offered in the market is also beneficial to consumers as we can choose the type of car we like with the specifications we like.

That was for short term effect. What will happen if the main producer of fuel continuously involved in crisis or the crisis took longer period to be calm and solve? The effect will be worsening and as could be as what had happen in 1970's where fuel supplies in West countries in that year were in critical situation.

Political stabilities also play important roles in influencing fuel price especially in Middle East countries. We know the fact that Middle East countries are rich with oil resources. Latest crisis in Libya has almost cut off about 300, 000 barrels of fuel production. According to Oil and Gas Journal (OGJ), Libya own total proven oil reserves of 46. 4 billion barrels as January 2011 which is the largest in Africa. Thus, war situation or this type of crisis has put fuel supplies at risk. Traders and analysis is watching closely on strikes especially in countries such as Iran as continuous oil price spikes could cause inflation and infecting global economic growth. Latest news, Oil companies reported has shut off their plant as the country is still in chaos. What is become worsening is the other country which is also producing fuel, Oman also involve crisis. That's frightened as the risk of oil production surely will stop.

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